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Observations on the Mechanical and Operative Treatment
of Hernia at the Hospital for Ruptured and
Crippled of New York.

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OBSERVATIONS ON THE MECHANICAL AND OPERATIVE TREATMENT OF HERNIA AT THE HOSPITAL FOR RUPTURED AND CRIPPLED OF NEW YORK.

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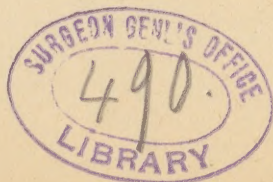
ASSISTANT SURGEON.

DURING the two years ending September 30, 1892, 9250 cases of hernia, or affections simulating hernia, were treated at the Hospital for Ruptured and Crippled. While the treatment carried out at this institution has been in the main mechanical, a certain number of cases in children have been subjected to operation. Adults requiring operative treatment have been referred to other hospitals. Of the total number, 9250, 8033 were cases of actual hernia, while 1115 more or less closely resembled hernia.

The different varieties of hernia were represented in the following order of frequency :

		M.	F.	Under 14.	R.	L.	D.
Inguinal	6757	6000	760	1802	3164	1746	1850
Umbilical	673	246	327	359	..	..	..
Femoral	474	171	303	8	272	146	56
Ventral	138	61	77	5	..	..	..

Mechanical Treatment.—The general plan of treatment in all reducible cases, except umbilical and ventral, is support by means of a steel spring truss as light as consistent with the effective control of the hernia. The form of truss generally employed is that known as the "Knight truss," so called from Dr. Knight, the founder of the hospital. It differs from most of the trusses in common use in being an "opposite side" truss, the spring extending but three-fourths the distance around the



pelvis and applied to the sound side, being held in place by a strap connecting the two ends of the spring. (See Fig. 1). The spring is made of imported steel, and so tempered that it can be sufficiently bent to fit the individual case. It is covered with thin rubber tubing, and from one end projects at right angles a steel shank two inches long to which the pad is fastened. This is made of soft wood, round, $1\frac{1}{2}$ to 2 inches in diameter, and is covered with several thicknesses of flannel and one of chamois skin.

For children, a hard wood polished pad is preferred, and leather or cloth is used for the covering of the spring. In a few cases the opposite side celluloid truss is employed. Some variation in the size and shape of the pad is required in exceptional cases, and the perineal straps have to be added occasionally to keep the steel band down and maintain the pad continuously over the orifice of the rupture. The direction of the pressure exerted by the pad is also varied to suit the case by bending the shank, which fixes the pad on the spring, or by twisting the spring itself.

In fully 75 per cent. of the cases this truss gives satisfaction. Its application is easy, its construction cheap. The latter consideration is of importance, since, roughly speaking, 50 per cent. of the cases treated are unable to pay the cost of the instrument. With proper care it often renders efficient service for two or three years without repair, and in some cases much longer.

In the smaller percentage of cases, when retention is difficult from various causes, or when patients desire a more expensive apparatus, the celluloid truss of the "frame" or "Hood" pattern (Fig. 2) is used. This is unquestionably the most comfortable form of truss, but it is too expensive for general use in this institution.

When from neglect or other causes the hernia has become large and unmanageable, and the patients are not fit subjects for operation, use is made of the scrotal bag, made of strong material and supported from the shoulders.

Umbilical Hernia.—Of the 673 cases of umbilical hernia, 359 occurred in children under fourteen years of age. The method employed in treating children under two years of age is to place over the opening a wooden button, which is kept in place by a strip of rubber plaster completely encircling the

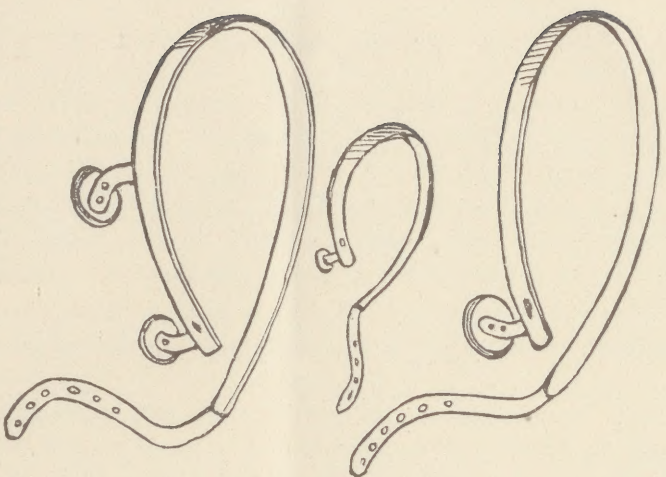


FIG. 1.—The "Knight" truss; single and double.

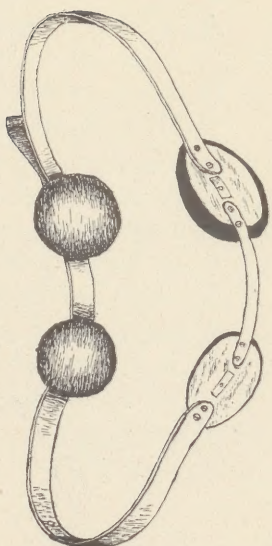


FIG. 2.—Frame truss, "hood."

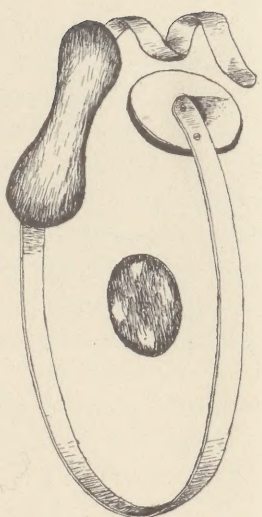


FIG. 3.—"Opposite side," or "cross-body" truss, with pad on end for inguinal hernia.

abdomen. This is allowed to remain a week or ten days, when fresh plaster is applied. In children it has been found impossible to keep any form of belt in place, although the belt is the routine treatment in the adult cases. Each belt is provided with a pad varying in shape and size. When reducible, a pad is always used under the belt. A large proportion are irreducible in whole or in part, and some of these are more comfortably supported by the belt alone, with the intervention of a soft cloth to prevent friction.

The omentum is more frequently the irreducible part. If in addition to this a portion of intestine, which is reducible, forms the contents of the sac, it is found possible to control the latter with a pad, while the former requires only the support of the belt.

It is exceptional to find patients even with irreducible omentum in umbilical hernia complaining of more than discomfort, and this is relieved by proper support. There has not come to our knowledge during the past two years a single case of strangulation. It seems, therefore, as if the danger of this condition had been exaggerated by the surgeons who advocate operation. It is, however, a situation that should be carefully watched, and patients should be warned of the significance of the symptoms of obstruction of the hernia, and the necessity of prompt action in threatened strangulation. The risks and the value of surgical operations in this form of hernia have not, up to the present time, been determined by any large experience.

General Results of Mechanical Treatment.—It has been the custom of some enthusiastic, and perhaps over-sanguine, advocates of "radical cure" methods, to assert that few or no herniæ can be cured without operation, while, on the other hand, some men of large experience in the mechanical treatment claim that most cases can be cured with a right kind of a truss. As is often the case, the truth probably is to be found midway between these two extremes. It must be admitted that a certain number of favorable cases, especially in children and young adults, are cured, and permanently cured, by wearing a truss for a longer or shorter term. Just what percentage this is it is very difficult to say. It is also true that a larger number of cases are found in which

the hernia is perfectly controlled by a truss, with but slight, if any, inconvenience to the wearer. There remains another class of cases in which the truss fails to hold completely on account of adherent or irreducible omentum. That this condition is by no means infrequent is shown by the fact that 298 cases were observed at the hospital during a single year. An analysis of these cases shows that 205 occurred in adult males and 93 in women and children.

The diagnosis is not, as a rule, difficult, though some cases so closely resemble other affections as to make a very careful examination necessary. The slip of adherent omentum, if reducible, can be made to reappear by gentle traction on the cord. This is sometimes difficult to differentiate, especially in children, from hydrocele of the cord, yet if we bear in mind the fact that adherent omentum is infrequent in children, and that hydrocele of the cord is common, and in addition that the latter condition has a peculiar elastic feel, mistakes will seldom be made. If doubt exists, it can be easily settled by a fine hypodermic needle.

If the omentum has been irreducible for a longer or shorter time, it may so closely simulate an adenitis that the diagnosis is extremely difficult. One case was seen at the hospital where a mass of adherent omentum the size of an English walnut had remained in the femoral region for five years. It had become red and painful on two occasions, but had caused no serious trouble. It so closely resembled an adenitis that the latter diagnosis was made by a large number of physicians and surgeons. Operation showed it to be a mass of omentum which had undergone cystic degeneration at its centre, leaving a cavity one-half an inch in diameter. In making the diagnosis the crural and inguinal openings should be carefully sought for. In adherent omentum, the tumor is usually single; in adenitis, several nodules may be made out. The history of the case, if it can be obtained with accuracy, will also throw light upon the diagnosis.

The treatment of this class of cases by mechanical means is but seldom satisfactory, and in the majority of cases positively harmful. Even in the milder cases, the slip of omentum being adherent to the sac, prevents perfect reduction, and renders the

wearing of a truss inefficient and frequently painful. In the severer cases, where the omentum is irreducible, the truss is still more objectionable.

The majority of these cases unless contraindications, *e. g.*, the age of the patient, or the presence of some other disease, exist, we believe should be treated by operation. With proper precautions there is but little risk, and even if relapse should occur a truss could be worn with much greater comfort and effect. During the past year upward of forty of these cases have been operated upon.

Hernia in Children.—2174 cases occurred in children under the age of fourteen. Of these 1802 were inguinal, 359 umbilical, 8 femoral and 5 ventral. Most of the cases are treated by spring truss, similar in form to that already described (Knight). In children under the age of one year the worsted or so-called "hank" truss has been extensively tried. This truss has been very highly praised by some, and as strongly condemned by others. During the past year an attempt has been made to give it an impartial trial, and alternate cases up to the age of one year were treated by the "hank" and the light spring truss. The results in 240 cases carefully followed up led us to discard the "hank" truss as a routine method of treatment, although there are still a few cases, *e. g.*, very young and ill-nourished infants, where it fills a useful but temporary place.

The results of almost every variety of mechanical treatment are far better in children than in adults, and the proportion of *permanent* cures is much greater, yet even in children there is a considerable number where no form of truss avails, and an operation offers the only prospect of cure, to say nothing of comfort and relief.

Such cases may be grouped as follows:

1. Cases of adherent omentum.
2. Cases of hernia complicated with reducible hydrocele.
3. Cases of irreducible and strangulated hernia.

With certain surgeons of high authority we may add another class, *viz.*, all cases which from various reasons are unable to command the large amount of care requisite for successful mechanical treatment.

Operative Treatment.—Hernia in children has long been regarded by the majority of physicians and surgeons as unsuited for operative treatment, and mechanical treatment has been persisted in even when known to be accomplishing nothing. This view is probably due to the somewhat general impression that most children get well without regard to whether the truss holds or not.

Careful observation shows that this is not true, but that many cases reach the age of fourteen years, having worn a truss from infancy, not only without cure, but with little prospect of cure.

Again, the operation is considered more dangerous in children than in adults on account of the difficulty of keeping the wound aseptic. Experience has shown this fear to be groundless.

During the past fifteen months, at the Hospital for Ruptured and Crippled, there have been operated upon forty cases, ranging between the ages of eight months and fourteen years. There has not been a single death, and in thirty-eight cases absolute primary union was obtained.

In nearly all cases the children were up and around the ward at the end of two and a half weeks, and left the hospital at the end of three weeks. The method employed in the majority of cases was the Bassini (in thirty cases). The Czerny-Risel method was used in nine cases. The remaining case was a *femoral* hernia, occurring in a boy seven years of age. The sac was ligated and the femoral canal closed with a "purse-string" suture of kangaroo tendon. The kangaroo tendon was also used in nearly all of the buried sutures in the Bassini operation, and it has given the greatest satisfaction. The wounds have all healed by first intention, and there has been no tendency to the formation of sinuses as frequently occur when silk is used, and to a less extent with silkworm gut. The kangaroo tendon and the ox peritoneum seem to fulfill all the requirements of a buried suture in a hernia operation. These sutures are soft and pliable, and remain unabsorbed a period of three months or longer, as shown by the experiments of Ballance and Edmunds.¹ This

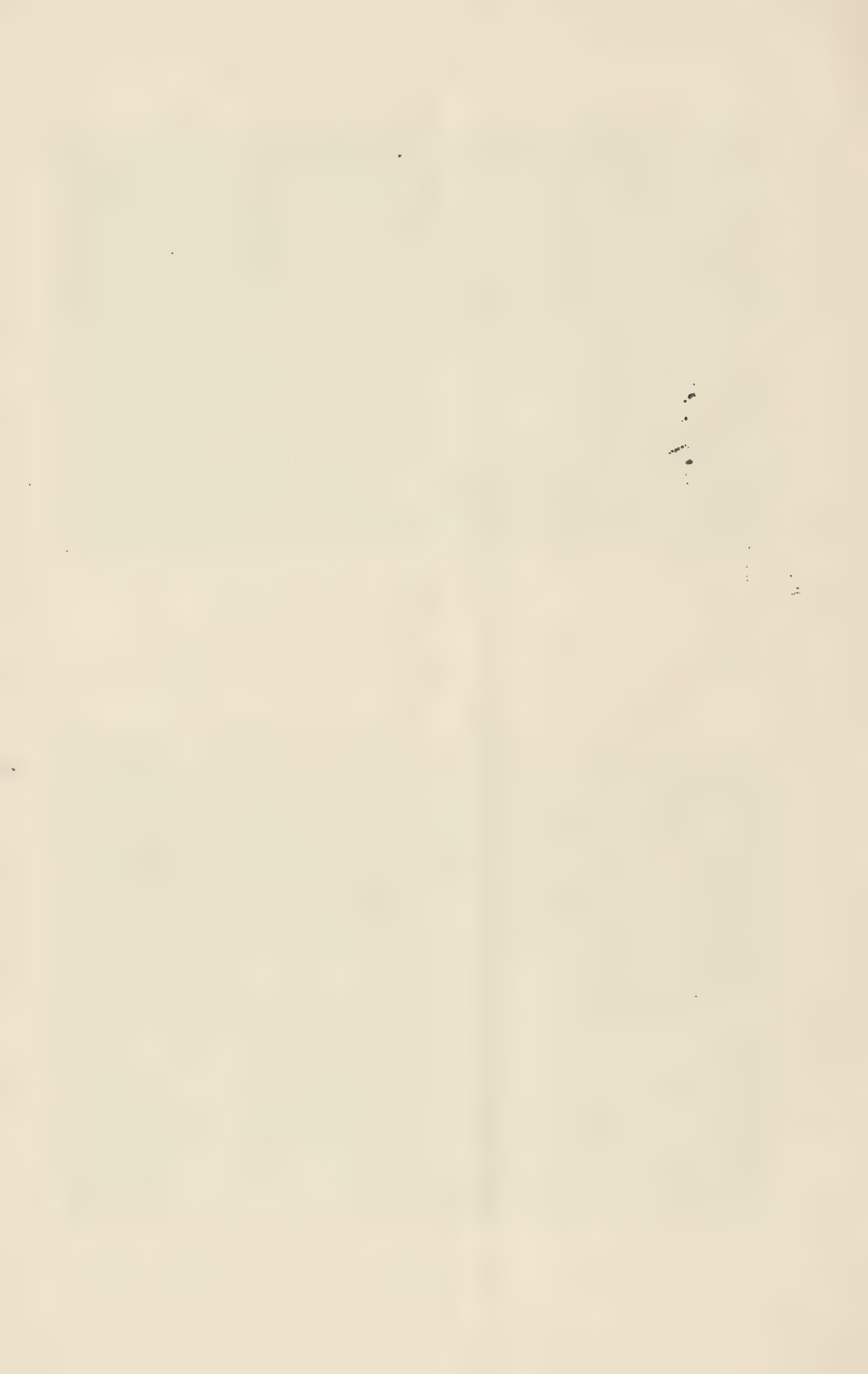
¹ *Ligature of Arteries in Continuity*, 1892.



FIG. 4.—Irreducible umbilical hernia with excoriations.



FIG. 5.—Ventral hernia following operation for appendicitis.



period is sufficiently long to assure a thorough agglutination of the parts without the necessity of confining the patient to bed for six or seven weeks.

Wound Treatment.—No drainage has been employed (with the exception of one case), and the results amply prove that it is unnecessary. In addition to the usual antiseptic dressing of iodoform and sublimate gauze, a light plaster-of-Paris casing is applied from the umbilicus to the ankle. To this measure is undoubtedly due to a large extent the prompt healing of the wound, since it insures the parts absolute rest. This casing is left on for eight days, when the wound is dressed for the first time, catgut being used to close the external wound. The stitches do not require removal, and the dressing can be postponed even longer if desired. After the first dressing an ordinary spica bandage is all that is required.

Final Results.—As the cases have all been operated upon during the past fifteen months, it is too early to estimate the number of permanent cures. The cases have been kept under constant and careful observation, and have nearly all been recently seen. Two relapses have occurred, one following a Czerny operation, the other a Bassini. Both failures were due to faulty technique. Silk sutures were used in both cases, and suppuration occurred to such an extent in the Bassini case that the sutures sloughed out and left no support to the canal. The Bassini operation was performed for the recurrence from the Czerny method, and the patient was seen a few days ago (nine months after operation) with not even an impulse at the site of the hernia. It is worthy of note that both relapses occurred within three months after operation.

Observations on Hernia Relapsing After Radical Cure Operations.—A number of patients applying for trusses have given histories of operations for radical cure. These statements have been confirmed by consulting hospital records, or by communicating with operators, and the method and immediate result as to wound healing have been accurately recorded in all but ten cases. The result of this investigation is summarized in the following table:

TABLE I.—HERNIA RELAPSING AFTER VARIOUS OPERATIONS.

Method.	No of Cases.	Nature of Hernia.	AGE.			HOSPITAL TREATMENT.				RELAPSE.				Remarks.
			Eldest.	Youngest.	Average.	Longest.	Shortest.	Average.	Longest.	Shortest.	Average.	Tuss.	No Tuss.	
Czerny.	3	Inguinal.	50	10	30	5 wks	3 wks	4 wks	6 mos	1 mo	3½	1	2	
Macewen.	5	1 irreducible.	50	31	36	16 wks	6	41	4½ yrs	4 mo	2½ yrs	3	1	
Socin.	5	2 irreducible, 3 reducible.	68	9	34	8 wks	9 days	3½ wks	2 yrs	2 wks	11 mos	2	3	
McBurney.	15	12 non-strang 3 strang.	58	18	39	10 wks	3	6½	2 yrs	1 mo	8 mos	14		
Bassini.	2	1 irreducible Sigmoid.	39	14	26	8 wks	7	7½	7 mos	3½ mos	5 mos		2	One case suppuration, other in sigmoid hernia and operation imperfect.
Heaton.	1	Reducible.	52											
Bryant.	1	Strang.	52			8 wks			5 mos				1	
Ball.	1	Irreducible.	60			6 wks			18 mos					
Suture of pillars; sac not found.	1	Reducible.	19			3 wks			1 wk					
Suture of pillars, with silver wire left in 3 weeks.	1	Inguinal.	45			3 mos			2 mos				1	
Suture of sac; sac not removed; suture of condensed catgut.	1	Left inguinal Sigmoid.	53			17 days			1 mo					Sigmoid hernia; large irreducible.
Unknown.	10	Inguinal.	70	18	36	8 wks	4 wks	7½ wks	2 yrs	2 mos	6 mos	2		
Femoral.	9	6 strang, 2 irreducible.	61	30	48	7	2	6	5 mos	2 wks	3 mos			

Here are 56 cases operated upon by 11 different methods or modifications. These, added to a similar series of cases already reported, covering the observations of Dr. Bull and Dr. Milliken for three years,¹ make a total of 137 operations for radical cure. The methods most numerous represented are those of Heaton in 10, Czerny in 25, Socin in 10, McBurney in 39, Macewen in 9, and Bryant in 2 cases. In 18 the method is unknown. Relapse has occurred at periods varying from a few weeks to 4½ years (a case operated upon by Dr. R. F. Weir by Macewen's method). These relapsed cases have little bearing on the question of comparative reliability of different procedures. They probably represent but a small proportion of those operated upon, and it is natural that the method most frequently found defective should be that which has been most in vogue in this vicinity—the “open method.” But the constant appearance of patients in whom the attempt to cure has failed must have the effect of diminishing one's confidence in the ultimate results of the radical cure method employed. The propriety of operation has been amply justified by its slight mortality and its incontestable benefit in cases of strangulated and irreducible hernia. Even after relapse the majority of these patients find themselves better than before the operation. The reappearing protrusion is smaller than the original rupture, and a truss is worn with greater comfort. An exception is to be noted only in a few cases of relapse after the open method, or in those where after other procedures prolonged suppuration has followed. The cicatrix resulting in this class of patients tends to grow softer and more yielding, and has been found so thin as to permit intestinal movements to be plainly seen. Subjected to the weight of the viscera from within, and the presence of the truss without, it is in a predicament most compromising to its vitality. Under these conditions the patient cannot be said to have been benefited by the operation, except when done for strangulation. These considerations lead to the conclusion that all “open methods” or operations, after which the wound is left to heal by granulation, should be discarded, and that *the* feature of every operation

¹ N. Y. Medical Journal, May 30, 1891.

which is to give satisfaction should be rapid *primary union*. If this latter statement be accepted, we should further discard all methods in which foreign bodies, even though aseptic, silk and silver wire, for instance, are buried in the wound.

Reported Results of Operations for Radical Cure.—As an offset to the disappointment excited by the observation of these relapsed cases, it is well to contemplate the results reported by individual operators. (See Table II.)

The study of the accompanying tables will show that general progress has been made, and that certain methods are entitled to be adopted until replaced by those with a still better showing. Thus we find that Bassini¹ has operated upon 262 patients with 1 death; that 239 patients (or 247 operations) were traced, that 47 were without relapse after two years, and that 108 had no recurrence for periods varying from 1 to 4½ years after the operation.

Championnière² has operated upon 275 cases, with 2 deaths; 112 have been kept under observation; 30 have gone 2 years without relapse, and 11 have remained solid for 4 years and over.

In view of these results Bassini's method has been practised during the past year by Dr. Bull, at the New York Hospital, and by Dr. Coley, on children, at this hospital (Hospital for Ruptured and Crippled) 30 cases. Dr. Coley has, furthermore, operated upon 12 cases by this method outside of this hospital.

Up to the present moment there have been no deaths and an insignificant proportion of relapses, 1 in over fifty cases. This method was first adopted in this country by Dr. R. F. Weir.

Another year or two will permit some conclusions as to the proportion of relapses, as the patients are all being kept under observation. Even now we have some data for comparing the operation with the older methods, in children at least, for in 1889 and 1890 16 children were operated upon at the Hospital for Ruptured and Crippled by the Socin and Czerny methods. Of these 6 relapsed the first year and 2 others later. Of Dr. Coley's 40 cases of children (3 operated upon during 1891) 30 were

¹ Archiv. f. klin. Chirurg., 1890.

² L. Championnière: Radical Cure of Hernia. Paris, 1892.

TABLE II.—METHODS AND RESULTS OF OPERATIONS FOR THE RADICAL CURE OF HERNIA.

Operator—Reference.	No. of Cases.	Nature of Hernia.	Condition.	Mortality.	Number of Relapses.	Truss.	No. Sound After 2 Years.	No. Well After 1 Year.	Remarks.
Banks, Mitchell, Brit. Med. J., Dec., 1887.	106	88 inguinal, 18 femoral.	68 reducible, 38 irreducible and strang.	4 died; 3.7 per cent.	18 relapsed, 66 traced; 26 per cent.	Most cases.	31		6 cases well after 5 years.
Barker, Brit. Med. J., 1890.	50		1		8, 38 traced; 21 per cent.				Period of observation 20 months. 20 cases under 10 years.
Ball.	22				3				
Socin.	147		75 reducible, 85 incarcerated.	2 died, 28 per cent; 11 died, 13 p. c.	133 traced.				
Billroth's Klinik, Haidenhain Archiv, Chir., 1890.	136	83 inguinal, 45 femoral, 8 umbilical.	93 reducible, 40 in cure.	6¼ p. c. in reducible cases.	34 traced, 10 relapsed; 32 per cent.				3 recurred 5 years after operation; 1 6 years after.
Championnière, Cure Radicale des Hernies Paris, 1892.	275		All reducible.	2 died; 8 p. c.	112 traced, 14 relapsed; 12 per cent.	Few cases.	30		11 well 4 years after operation.
Bassini, Archiv. f. klin. Chir., 1890.	262	Inguinal.	non-strang 251, strang 11.	1 died tenth day of pneu- monia.	239 cases = 247 opera- tions traced; 7 recurred.	Few.	47		108 well 1 to 4½ years after operation.
Macewen, Brit. Med. J., 1888, No. 10. Escher (Bassini's op.) Arch. f. klin. C., 1892.	81 53	65 inguinal, 15 femoral.	51 reducible, 29 strang. 48 reducible, 5 strang.	4 died.	1 31 traced, 3 relapses.	Few.	10		

Operator—Reference.	No. of Cases.	Nature of Hernia.	Condition.	Mortality.	Number of Relapses.	Truss.	No. Sound After 2 Years.	No. Well After 1 Year.	Remarks.
Kocher, Ann. of Surgery, Dec. 1892.	119			1 died.	94 traced, 20 recovered, 21 per cent.	Few cases.			
Marcy, H. O., Hernia, 1892.	112				78 traced, 4 relapses.	No truss.			Time of observation not given.
McBurney, "Open Method."	36		36 reducible		1		1		14 cases observed less than 6 months.
Halstead, Johns Hopkins.	57				No relapses.				
Poore, C. T., N.Y. Med. J., 1892.	24				1		13		All in children; 19 open method, 4 Macewen.
Wood, Archiv. f. klin. Chir., 1890.	330			7 died; 2 per cent.	20 per cent.				
Park Roswell.	118			(2) in non-strang. cases.	118 traced. 44 relapses.	Most cases.			
Bull, W. T., Med. News, 1890, p. 8.	209			None in non-strang. 1 in strang.	54 traced. 2 relapses.	Most cases. (Temporary).			39 in children under 14; Bassini operation in 42 cases.
Coley, W. B.	60	4 femoral. 5 cecal. 56 inguinal.	5 strang. 7 irreducible 48 reducible.	Mortality in non-strang. cases 23 cases = 1 per cent.			132		
Total.	2197								

operated upon by Bassini's method. But 1 of these cases has relapsed, and in this case (the first) there was prolonged suppuration.

Ventral Hernia Following Abdominal Section.—Sixty cases have applied for relief for ventral hernia following various abdominal operations. An attempt has been made to analyze these cases with a view of ascertaining the conditions upon which a failure to obtain a permanent closure of an abdominal wound chiefly depend. Although careful histories have been taken of all the cases, much necessary data has not yet been obtained, and for the present at least we must content ourselves with a few general observations. Of the 60 cases 9 followed operations for appendicitis; 3 Alexander's operation; 1 suprapubic cystotomy; 1 ligature of external iliac artery. The length of the incision varied from two to eight inches, and in a general way it may be said that the size of the hernia corresponds to the length of the cicatrix. The wound healing has also an important bearing upon subsequent hernia.

In a large number of the cases the wounds healed by granulation; and in cases where primary union occurred the herniæ were much smaller. In nearly all the cases of appendicitis the wound healed by granulation, as shown by the wide cicatrix.

In one case of hernia following an operation for appendicitis strangulation occurred.

Miscellaneous Cases.—The cases worthy of special note are the following:

(1) Hydrocele of the canal of Nuck. Nine cases were observed during the year.

Hydrocele in the female is sufficiently rare to make these cases worthy of a full description were it not for the fact that they have been referred to in detail in a recent monograph on the subject.¹

(2) Properitoneal hernia. One case. This variety of hernia is comparatively rare, not more than one case being seen in a year, or about one in 5000 cases. The causes that give rise to it

¹ Hydrocele in the Female, with a Report of Fourteen Cases. By W. B. Coley. ANNALS OF SURGERY, July, 1892.

may be several, but the most frequent and important is a partially descended testis. Of four cases seen by the writers this was present in three, while a hydrocele of the canal of Nuck constituted a similar factor in the fourth.

The accompanying photograph shows the external appearance in the present case. The right half of scrotum was empty, but by pressure on the tumor in the inguinal, or rather the iliac region, the testis, of one-half the size of the left, could be made to emerge from the external ring. The tumor was as large as two fists, and extended upward and outward half way from the internal ring to the anterior superior spine, and hung over Poupart's ligament. It was dull on percussion, semifluctuating, and but a small portion reducible. The operation (which was done at the New York Hospital, by Dr. Bull) showed the sac spread out above the internal ring, with the external ring widely dilated. The tunica vaginalis extended just beyond the external ring, and the testis was found opposite the pubic bone. Three-fourths of the entire omentum was found in the sac, but there was no bowel present. There were no adhesions, but the omentum reduced with difficulty, because the neck of the sac was long and narrow, its body being expanded. The omentum was removed and testis likewise, and the wound closed by Bassini's method.

The diagram shows the relation of the sac, external and internal ring and testis. For a further description of this form of hernia, with a report of two cases treated by operation, see Clinical Report of Operative Surgery, in the service of Dr. William T. Bull.¹

Multiple Herniæ.—The largest number of herniæ observed in a single individual was five, two inguinal, two femoral and one umbilical. What makes the case still more interesting, is the fact that four of the herniæ had been operated upon by three different methods. One had recently relapsed (Macewen's operation).

Maldescent of Testis.—Four cases of testis in the perinæum were seen during the past year. All occurred in young infants, and no operation was advised until the patients were older.

Femoral Hernia in Children.—This variety of hernia is

¹ W. B. Coley: N. Y. Med. Jour., 1890.



FIG. 6.—Pro-peritoneal hernia with undescended testis.

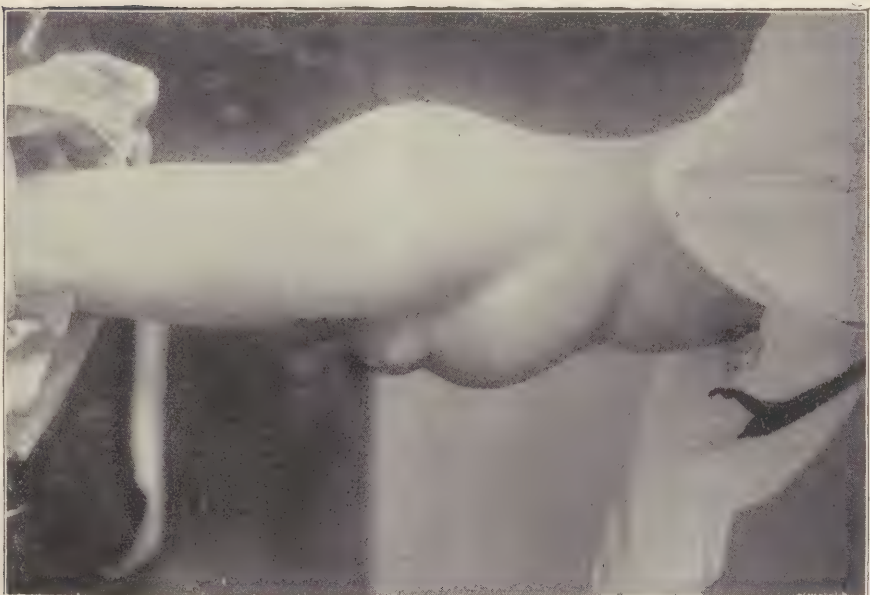


FIG. 7.—Inguinal-ventral. (Hour-glass form.)

seldom seen in children under the age of fourteen years, but it is not so rare as many writers on hernia would have us believe. During the past two years 8 cases were treated at this hospital, and during a single year (1892) 5 cases were observed under twelve years. One occurred in a boy of seven years, and was associated with an inguinal hernia on the opposite side. Another was seen in a girl of six years, and a third in a girl of five years.

The accompanying cut shows a large inguinal hernia, coexisting with a ventral protrusion, emerging on the outer side of the rectus muscle.

The object of these brief notes has been to give as concisely as possible the chief points of interest and importance gleaned from the observation and treatment of these 9000 cases of hernia.

